ZooKeys 480: 21–39 (2015)
doi: 10.3897/zookeys.480.9166
http://zookeys.pensoft.net

RESEARCH ARTICLE

A peer-reviewed open-access journal
ZooKeys
Launched to accelerate biodiversity research

Two new species of *Bryobia* (Acarina, Prostigmata, Tetranychidae) from South France

Philippe Auger[1], Tea Arabuli[2], Alain Migeon[1]

1 *INRA, UMR 1062 CBGP (INRA, IRD, CIRAD, Montpellier SupAgro), Campus de Baillarguet, 34988 Montferrier-sur-Lez, France* **2** *Institute of Entomology, Agricultural University of Georgia. University Campus at Digomi David Aghmashenebeli Alley, 13-th km, 0159, Tbilisi, Georgia*

Corresponding author: *Philippe Auger* (Philippe.Auger@supagro.inra.fr)

Academic editor: *V. Pesic* | Received 19 December 2014 | Accepted 14 January 2015 | Published 2 February 2015

http://zoobank.org/5AF51678-027F-4499-A574-169894D34B64

Citation: Auger P, Arabuli T, Migeon A (2015) Two new species of *Bryobia* (Acarina, Prostigmata, Tetranychidae) from South France. ZooKeys 480: 21–39. doi: 10.3897/zookeys.480.9166

Abstract

Two new species of Tetranychidae belonging to the genus *Bryobia* are reported from France. *Bryobia belliloci* **sp. n.** and *B. gigas* **sp. n.** collected on *Genista cinerea* and *Bituminaria bituminosa*, respectively, are described and illustrated in the present work. Additional data to the original description of *B. cinereae* are given and an identification key to known *Bryobia* species from France is also provided.

Keywords

Acari, Tetranychidae, new species, Leguminosae, France

Introduction

Among forty eight species of Tetranychidae recorded from France fourteen species belong to the genus *Bryobia* Koch, 1836, six of them being endemic to this country (Migeon and Dorkeld 2006–2014). Recent sampling efforts conducted near the Mediterranean coast disclosed two new species of tetranychid mites belonging to this genus. In the current paper we report their descriptions, we complete the description of *B. cinereae* with measures and drawings of characters usually not reported in descriptions and we provide a key to the fourteen species of *Bryobia* known from France.

Copyright *Philippe Auger et al.* This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Material and methods

Mites were collected directly from field samples in 70% ethyl alcohol. Following clearing in lactic acid (50%) for 24 hours they were mounted in Hoyer's medium. The specimens were examined using a Leica DM LB 2 phase contrast microscope and illustrated with the aid of a drawing tube attachment (*camera lucida*). Measurements were taken using the imaging software Perfect Image® (Clara Vision) coupled with ProgRes® Capture Pro 2.6 software for image acquisition. The setal nomenclature used in the descriptions follows Lindquist (1985). Leg setal counts are given in the order: coxa-trochanter-femur-genu-tibia-tarsus. Numbers of setae refer to tactile setae, solenidia are given in parentheses and alternative counts are given in brackets. All measurements are given in micrometers and correspond to the holotype followed (in parentheses) by minimum and maximum values from paratypes. Setae were measured from the centre of their setal bases to their tips. The distance between two setae was measured as the distance from the centre of one setal base to the other.

Systematics

Family Tetranychidae Donnadieu, 1875
Subfamily Bryobiinae Berlese, 1913
Tribe Bryobiini Reck, 1952
Genus *Bryobia* Koch, 1836

***Bryobia belliloci* sp. n.**
http://zoobank.org/4C94F5E0-E6FC-4FDA-9BCD-30629D4703A6
Figures 1–5

Type material. Holotype (female), 22 female, 1 deutonymph and 1 protonymph paratypes on 25 microscopic preparations from *Genista cinerea* (Vill.) DC. (Leguminosae), Pla d'Auçà (42°35.28' N, 2°20.58' E, alt. 1,210 m), Serdinya, Pyrénées-Orientales (66), France, 6.VI.2013, leg. P. Auger and A. Migeon. All the material housed in the collection of the Centre de Biologie et de Gestion des Populations (CBGP), coll. Auger-Migeon N°1839 for holotype and 1840-1863 for paratypes, 34988 Montferrier-sur-Lez, France.

Diagnosis. Limited anterior dorsal propodosomal projections over gnathosoma, outer prodorsal lobes scarcely developed more resembling to tubercle-like structures, inner lobes more developed, base almost fully fused, more or less cone-shaped, with wide shallow incision between inner vertical setae (v_1). Dorsal setae elongate, serrate, with sharp tips, inserted on tubercles, subequal in length on hysterosoma, second pair of dorsocentral hysterosomal setae (d_1) longer than distance to consecutive setae (e_1) insertions, f_1 and f_2 setae marginal and contiguous. Empodia with two rows of tenent hairs.

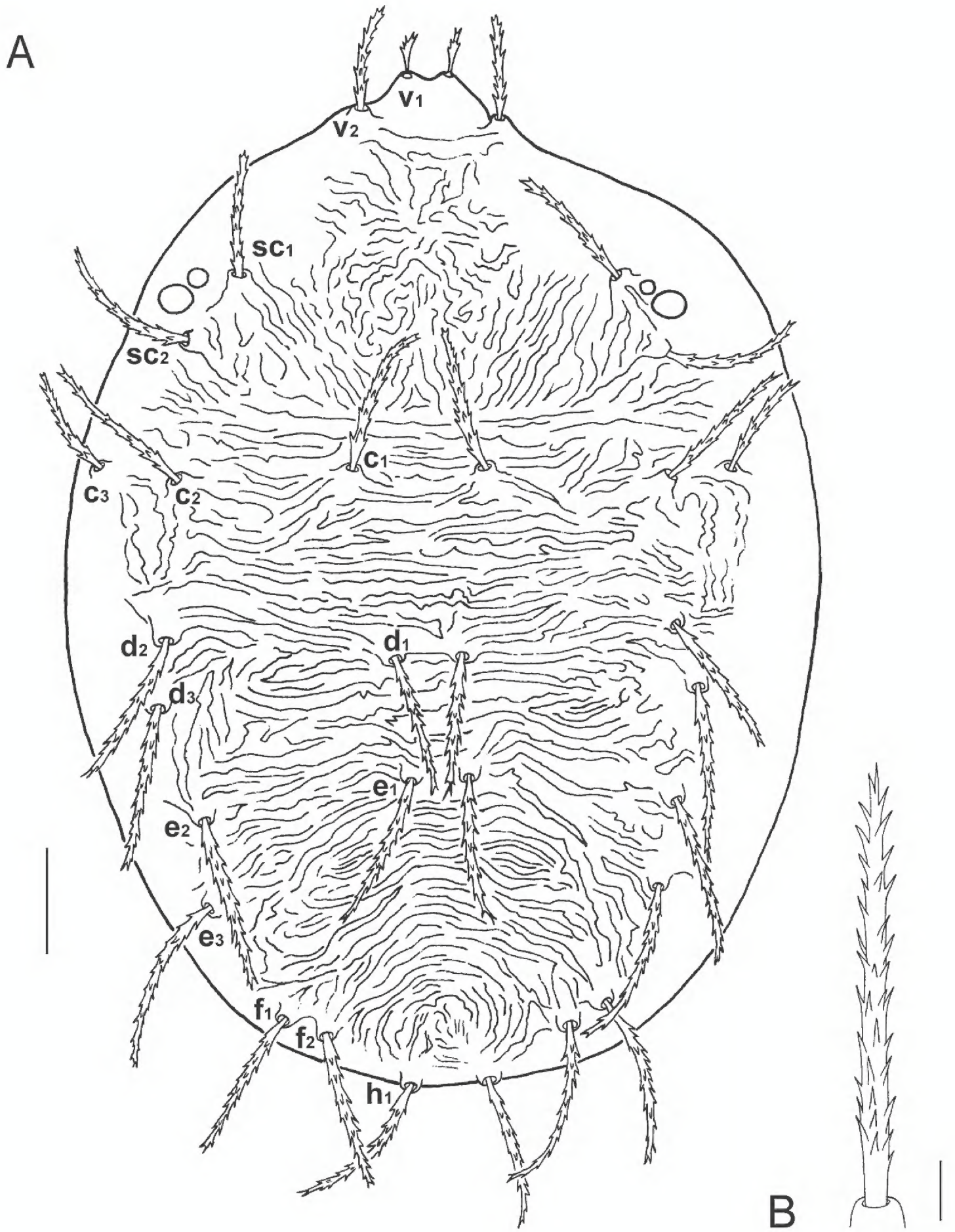

Figure 1. *Bryobia belliloci* sp. n., female: **A** dorsal aspect **B** dorsal h_1 seta. Scale bars = 50 μm (**A**), 10 μm (**B**).

Description. FEMALE. Holotype 485 long (excluding gnathosoma) gnathosoma 110 long (measured to the tip of palps), width 352. 9 paratypes measured, 481–528, gnathosoma 104–120 long, width 318–354.

Dorsum. Prodorsum with four pairs of setae, with weakly developed anterior lobes (Figs 1A, 2A–B). Outer propodosomal lobes small, about 10 µm, more or less similar in length to dorsal tubercles; inner lobes with large fused base forming cone-shaped projection, incision between median lobes wide and shallow. Basal width of propodosomal lobes about 76 (74–82), distance between first (v_1) and second (v_2) pair of propodosomal setae insertions 19 (17–19) and 65 (49–70), respectively. v_2 setae about 2.5 the size of v_1. An imaginary transversal line joining tip of v_1 setae crosses v_2 setae about their two-thirds. Dorsal body setae elongated, slender, serrate, acute distally, inserted on tubercles, subequal in length (v_1, v_2, c_3 setae smaller, v_1 the smallest) (Fig. 1B). Dorsocentral setae c_1 and e_1 shorter than distances between consecutive setae, d_1 longer than distance between setal insertions d_1 and e_1 (length of holotype and variations of 9 paratypes): v_1 20 (18–23); v_2 52 (48–54); sc_1 65 (65–71); sc_2 70 (62–70); c_1 74 (74–88); c_2 75 (66–75); c_3 55 (52–60); d_1 74 (71–81); d_2 80 (77–90); d_3 82 (78–91); e_1 79 (76–90); e_2 83 (79–91); e_3 83 (78–92); f_1 81 (76–85); f_2 84 (76–84); h_1 72 (69–73). Distances between setae: c_1- c_1 69 (58–70), d_1- d_1 33 (30–43), e_1- e_1 26 (20–28), c_1- d_1 91 (90–96), d_1- e_1 59 (59–74). Sacral setae (f_1 and f_2) in marginal position and contiguous. Dorsal body surface wrinkled, on propodosoma irregular medially and mostly oblique laterally, transverse on hysterosoma, more or less arched in the distal part comprised between e_3 and h_1 setae. Area immediately anterior to h_1 setae with fine arched reticulation.

Gnathosoma. Stylophore rounded, slightly emarginate anteriorly, longer than wide. Tibial claw of palpus bidentate (Fig. 2C). Palptarsus slightly elongated, longer than tibial claw, about 21 (19–21) long (including setae) with six setae and one solenidion. Eupathidia *ul'*ζ, *ul''*ζ shorter than solenidion, *su*ζ shorter. Peritreme anastomosed distally in an oval enlargement: length 20 (20–26), width 9 (9–11) (Fig. 2D).

Venter. Striation transverse between 1st (*1a*) and 2nd (*3a*) pairs of setae, irregularly longitudinal (broken medially, oblique laterally) between 2nd and 3rd (*4a*) pairs of setae, transverse between members of *4a* and between *4a* and aggenital (*ag*) pairs of setae. Area immediately anterior to genital flap with irregular longitudinal striation, V-shaped between *ag* setae. Sacculus of spermatheca small and oval (Fig. 2E). Three pairs of pseudanal setae (ps_{1-3}) and two pairs of ventrocaudal (h_{2-3}) setae present.

Legs. Shorter than body length. Leg I 330 (317–335) long (measured from trochanter to tarsus), leg II 249 (237–250), leg III 245 (237–260), leg IV 272 (266–281). Length of segments of leg I as follows: trochanter 24 (21–30), femur 101 (92–108), genu 57 (50–57), tibia 71 (66–74), tarsus 78 (74–78). Leg setal counts as follows (Figs 3A–B, 4A–B):

I	2 – 1 – 9 [7-10] – 4 – 9 [8] + (1) – 17[16] + (2) + 2 duplexes;
II	1 – 1 – 6[5-7] – 4 –5[3-4] – 15[14] + (2) + 1 duplex;
III	1 – 1 – 4[3-5] – 2 [1-3] – 4[5] – 12[11] + 1 duplex;
IV	1 – 1 – 4 [3-5] – 2[3] – 6 [4-5] – 13[12-14] + (1).

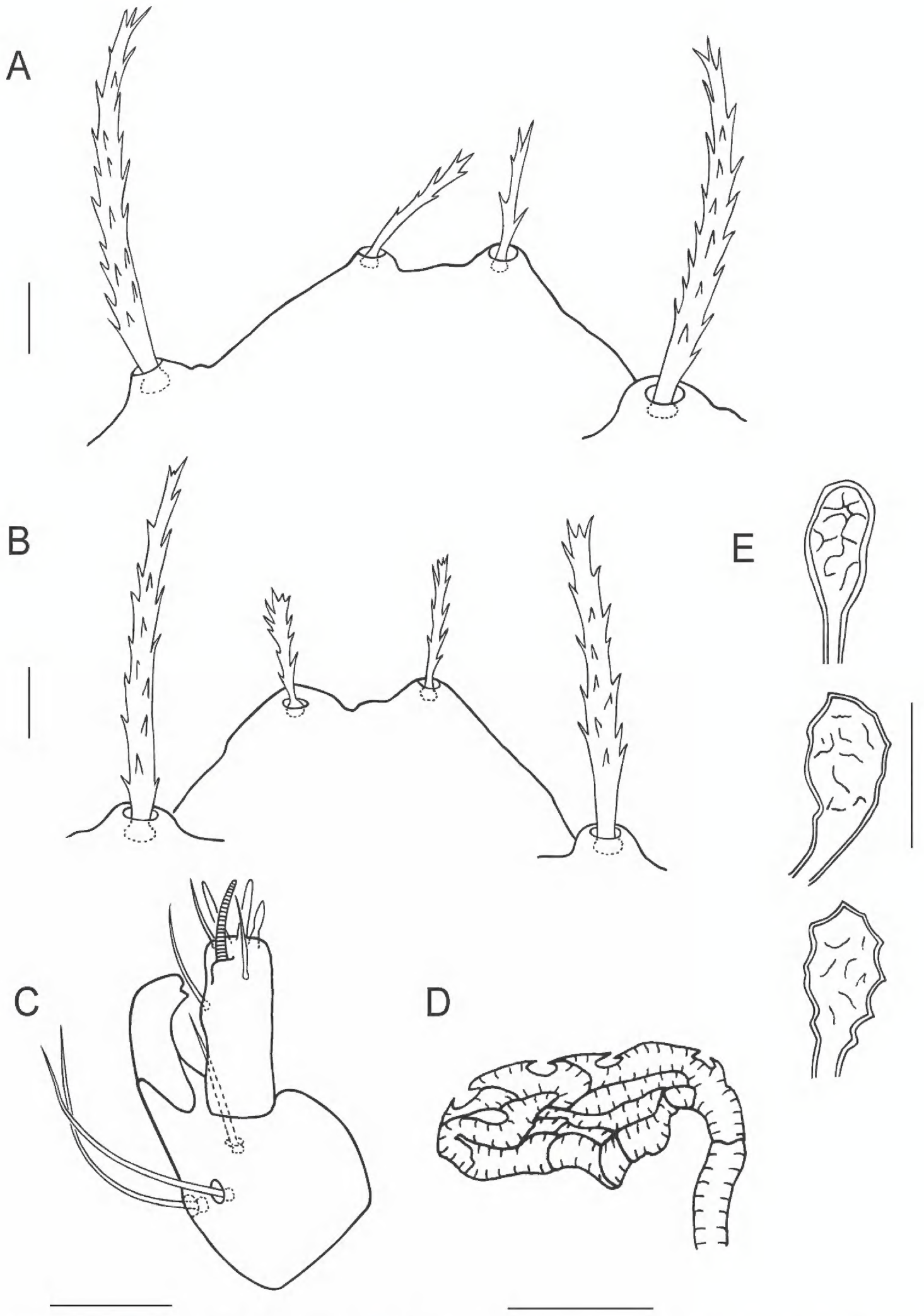

Figure 2. *Bryobia belliloci* sp. n., female: **A–B** prodorsal lobes (variations) **C** palpal tibia and tarsus **D** peritremal distal anastomosis **E** spermatheca (variations). Scale bars = 10 μm.

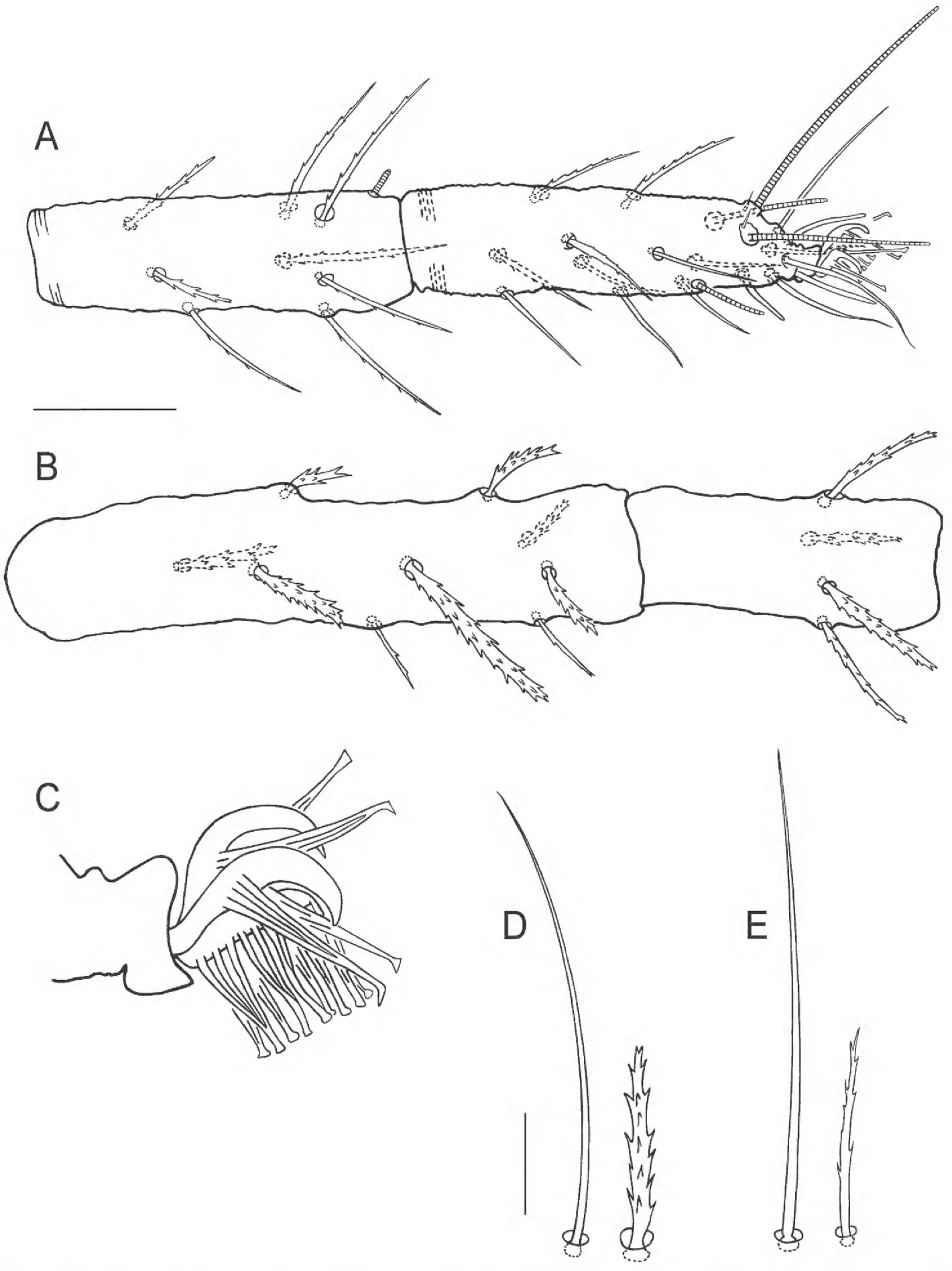

Figure 3. *Bryobia belliloci* sp. n., female: **A** tarsus and tibia I **B** genu and femur I **C** claws and empodia I–IV **D** coxisternal setae *1b* and *1c* **E** *Bryobia cinereae* Auger & Migeon (2014), Holotype female, coxisternal setae *1b* and *1c*. Scale bars = 25 µm (**A–B**), 10 µm (**C–E**).

True claws uncinate, with one pair of tenent hairs, empodial pads I-IV similar with two rows of ventrally directed tenent hairs (Fig. 3C). Internal lateral seta l'_1 on femur I large 37 (34–40), serrated. Proximal coxisternal seta *1b* slender 45 (41–50), distal cox-

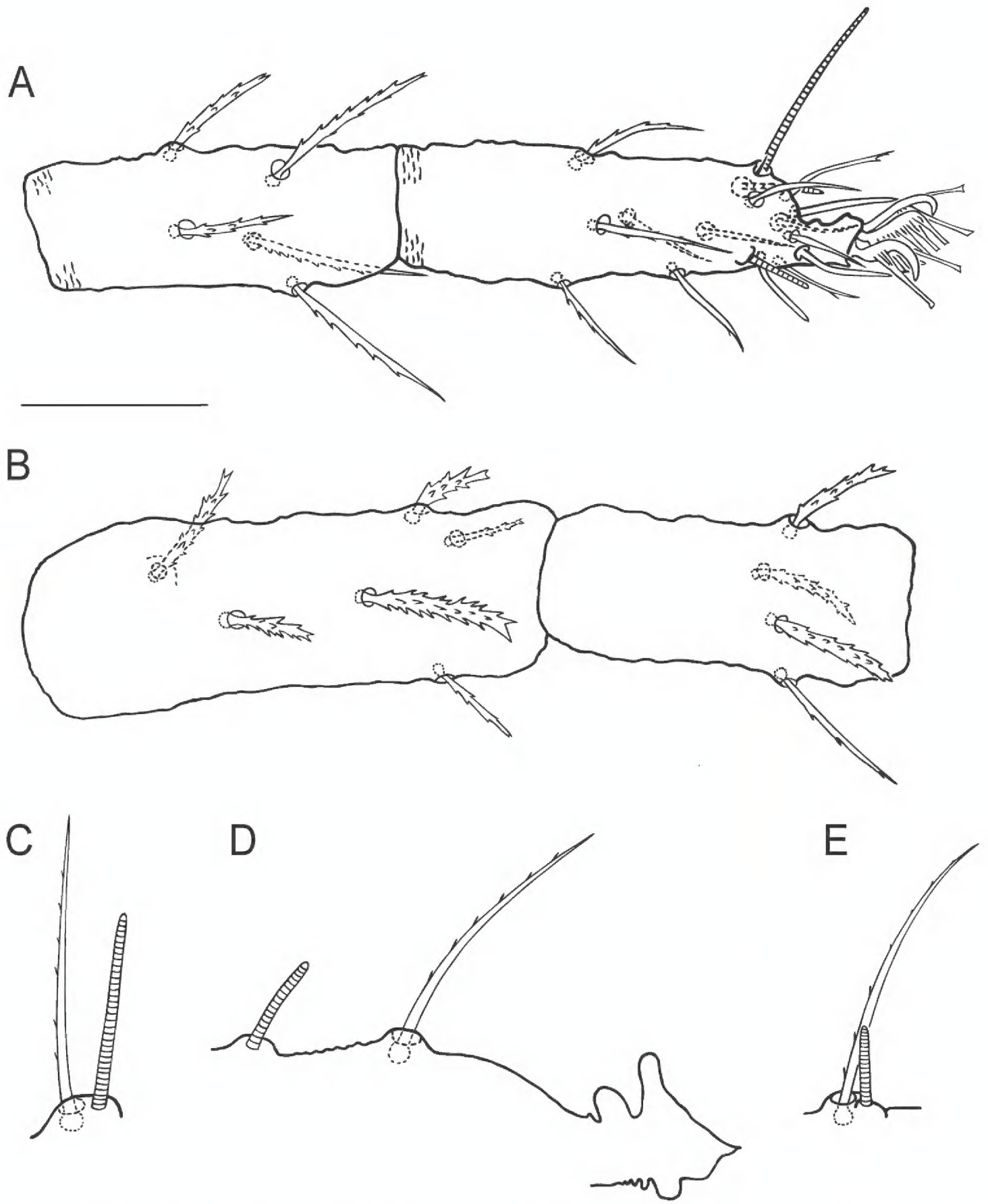

Figure 4. *Bryobia belliloci* sp. n., female: **A** tarsus and tibia II **B** genu and femur II **C** duplex setae on tarsus III **D** solenidion and associated tactile seta on tarsus IV **E** abnormal duplex setae on one tarsus IV of Holotype. Scale bars = 25 µm (**A–B**), 10 µm (**C–E**).

isternal seta *1c* shorter 18 (18–21), serrate, stout (Fig. 3D). Tarsus III associated setae serrate and approximate with solenidion forming duplex, tactile member longer and proximal, solenidion about ¾ the length of tactile (Fig. 4C); tarsus IV with solenidion well-separated from tactile, proximal, about 1/3 the length of tactile (Fig. 4D–E).

MALE: Unknown

DEUTONYMPH: one specimen measured, 520 long (including gnathosoma), width 330.

Dorsum. Prodorsal lobes similar in shape to females (Fig. 5A), prodorsal setae v_1 and v_2 elongated and serrate, v_2 the largest about 3 times the length of v_1; an imaginary transverse line joining the tips of v_2 setae passes well the tips of v_1. Dorsal body setae slender, needle-like and serrate, inserted on tubercles. Setae c_1 and e_1 shorter than distances between consecutive setae, d_1 longer than distance between setal insertions d_1 and e_1. Setae f_1 and f_2 in marginal position, contiguous. Lengths of dorsal setae: v_1 15; v_2 44; sc_1 58; sc_2 - ; c_1 64; c_2 64; c_3 39; d_1 76; d_2 71; d_3 70; e_1 68; e_2 70; e_3 74; f_1 80; f_2 64; h_1 63.

Legs. Shorter than body length, leg I 233 long (including coxa). Internal lateral seta (l') on femur I large. Leg setal counts as follows:

I	2 – 1 – 6 [5] – 4 – 5 + (1) – 13 + (1) + 2 duplexes;
II	1 – 1 – 3 – 4 – 3 – 11 + 1 duplex;
III	1 – 1 – 2 – 1 – 3 – 10 + (1);
IV	1 – 0 – 2 – 1 – 3 – 10.

True claws uncinate with one pair of tenent hairs, empodia with two rows of tenent hairs. Tarsus III with solenidion well-separated from tactile, proximal.

PROTONYMPH: one specimen measured, 355 long (including gnathosoma), width 240.

Dorsum. Prodorsal lobes absent, v_1 very short, poorly indented, not inserted on tubercle, v_2 larger, elongate and serrate, inserted on tubercle (Fig. 5B). Other dorsal body setae slender, serrate, inserted on tubercles except c_3. Setae f_1 and f_2 in marginal position, not contiguous. Lengths of dorsal setae: v_1 8; v_2 37; sc_1 -; sc_2 30 ; c_1 -; c_2 -; c_3 21; d_1 -; d_2 46; d_3 -; e_1 -; e_2 -; e_3 44; f_1 56; f_2 43; h_1 45.

Legs. Shorter than body length, leg I 196 long (including coxa). Internal dorsal row on femur I with one long seta finely serrate. Leg setal counts as follows:

I	2 – 0 – 3 – 4 – 5 + (1) – 9 + 2 duplexes;
II	1 – 0 – 3 – 4 – 3 – 9 + 1 duplex;
III	1 – 0 – 2 – 1 – 3 – 8;
IV	0 – 0 – 2 – 1 – 3 – 6.

True claws uncinate with one pair of tenent hairs, empodia with two rows of tenent hairs.

Remarks. The combination of prodorsal lobes poorly developed, dorsal setae not spatulate but slender and leg setal counts brings this species very close to *B. cinereae* Auger & Migeon, 2014. It can be distinguished from this species by the shape and the size of dorsohysterosomal setae: they are wider, stouter in *B. cinereae* but longer in *B. belliloci*. Thus, dorsocentral setae are shorter than the distance between consecutive setae in *B. cinereae* whereas d_1 setae surpass well e_1 setal insertions in *B. belliloci*. Notice-

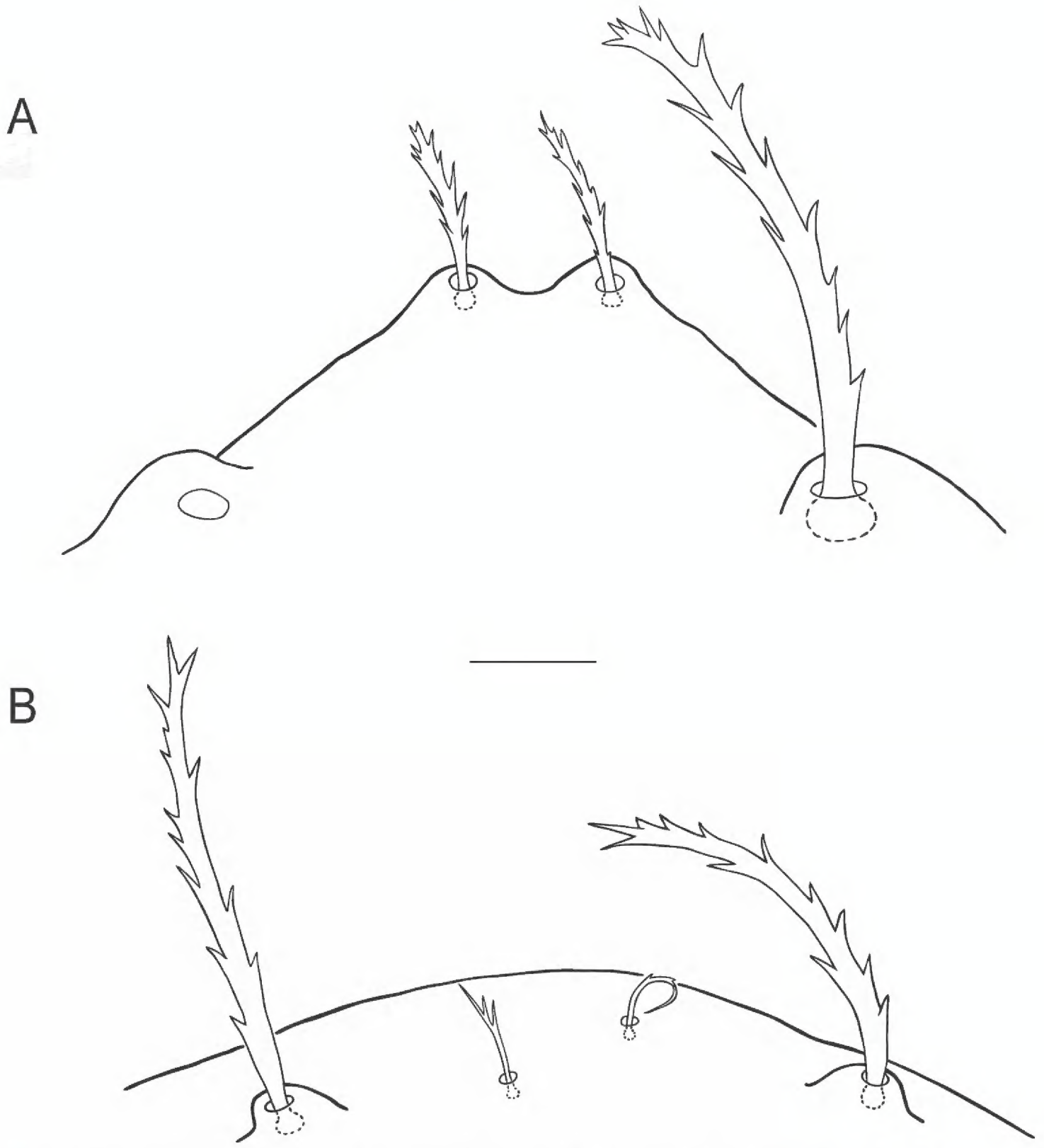

Figure 5. *Bryobia belliloci* sp. n., prodorsal anterior part: **A** deutonymphal prodorsal lobes **B** protonymphal vertical setae (v_1, v_2), absence of prodorsal lobes. Scale bar = 10 μm.

able differences are also present regarding the following morphological characters in *B. belliloci*: 1) the incision between the inner prodorsal lobes is wider and shallower; 2) the four legs are longer; 3) the peritremal distal enlargement is shorter; 4) the internal lateral seta l'_1 on femur I is longer (Table 1); 5) coxisternal setae *1b* and *1c* are similar in length compared to those of *B. cinereae* (Table 1) but the coxisternal seta *1b* is serrate, quite stout, *versus* weakly serrate and narrower in *B. cinereae*. (Fig. 3D, E).

Etymology. The species designation *belliloci* refers to a village that felt into ruin, named Bell Lloc (meaning beautiful place in Catalan language) that is close to the place where mites were collected.

Table 1. Lengths of the internal lateral seta l'_1 on femur I and of the coxisternal setae *1b* and *1c* of *Bryobia cinereae* (lengths are given in micrometers).

	Seta l'_1 on femur I	Coxisternal seta *1b*	Coxisternal seta *1c*
Holotype	31	48	18
Paratype 1	29	46	20
Paratype 2	27	45	19
Paratype 3	31	44	20

Bryobia cinereae Auger & Migeon, 2014

http://zoobank.org/5C0B1E07-FD04-4829-9959-CE6FFE1E5D60

Figure 3E

Remarks. Additional data to the original description of *B. cinereae* are provided. Despite that usually not included in descriptions, they appeared to be useful for the comparison of this species with *B. belliloci*. Drawings of the two coxisternal setae *1b* and *1c* are shown in Fig. 3E. Measures of their lengths and that of the internal lateral seta l'_1 present on femur I in holotype and paratypes are given in Table 1.

Bryobia gigas sp. n.

http://zoobank.org/12B3D6D0-E26A-4625-BA5A-1A6DF4A57BFD

Figures 6–10

Type material. Holotype (female), 9 female and 2 larvae paratypes on 12 microscopic preparations from *Bituminaria bituminosa* (L.) C.H. Stirt. (Leguminosae), Four de la caux (43°35.2241N, 3°44.9143E, alt. 90 m), Pignan, Hérault (34), France, 23.XII.2012, leg. P. Auger. All the material deposited in the collection of the CBGP, coll. Auger-Migeon N°1827 for holotype, 1828–1838 for paratypes.

Diagnosis. Body and leg I large, anterior dorsal propodosomal projections over gnathosoma well developed, inner lobes with fused base, candle like-shaped distally, incision between inner vertical setae (v_1) wide, bottom rounded. Dorsal body setae short, spatulate, serrate, inserted on small bulges, subequal in length on hysterosoma, f_1 and f_2 setae marginal not contiguous. Empodia I with a pair of tenent hairs, others with two rows of tenent hairs.

Description. FEMALE. Holotype 880 long (including gnathosoma), width 593. 7 paratypes measured, 860–916 long, width 574–628.

Dorsum. Prodorsum with four pairs of setae, anterior propodosomal lobes well developed (Figs 6A, 7A–B). Lobes with basal width about 125 (122–134), outer propodosomal lobes 66 (61–74) high (excluding setae), teat-like shaped, extending about three quarters of inner lobes; inner lobes longer than broad, 73 (63–76) high, 51 (49–56) wide, with fused base about half their length, well separated by deep, wide and bottom rounded incision 27 (27–33) in depth (measured from the bottom of the incision

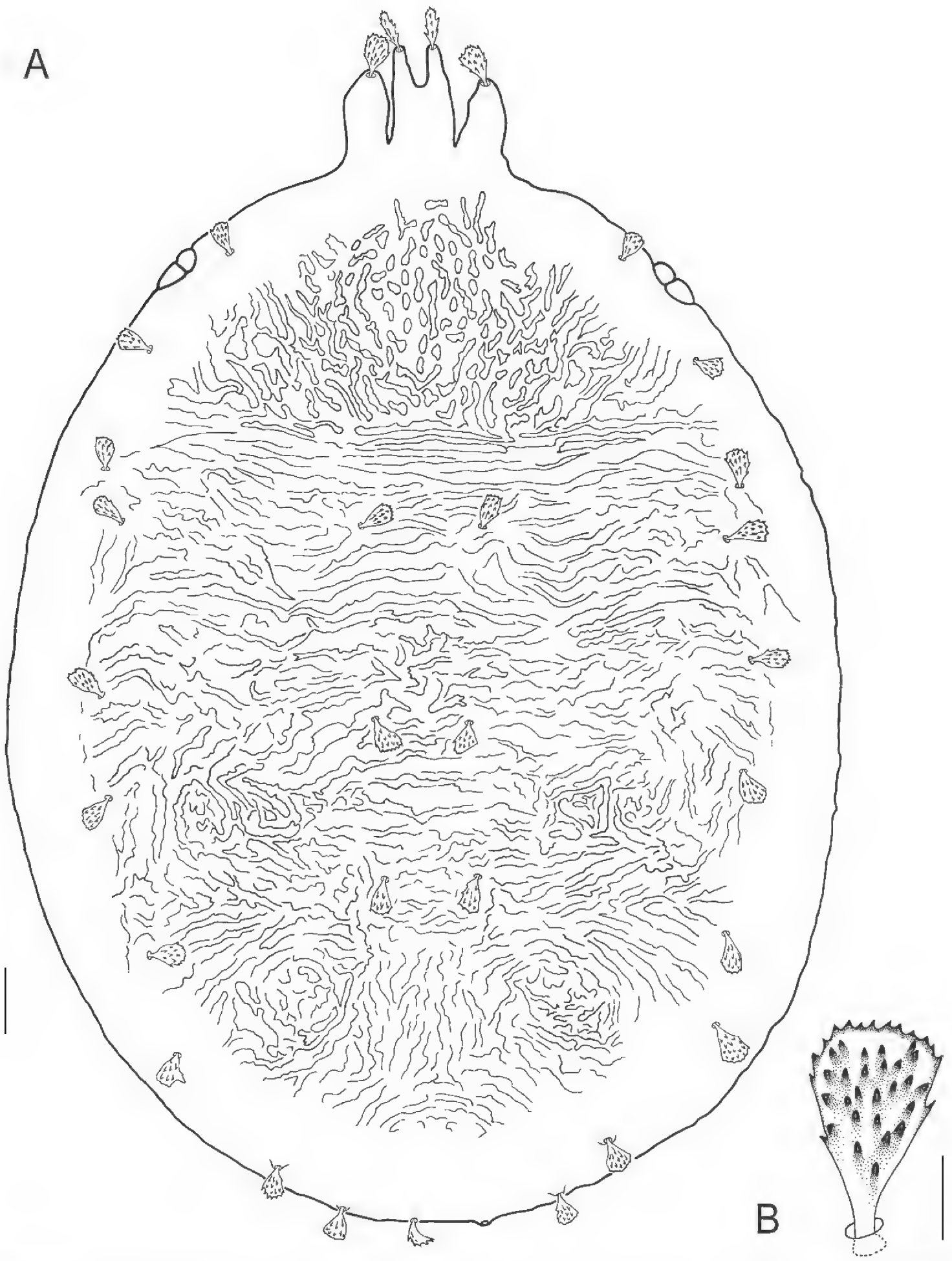

Figure 6. *Bryobia gigas* sp. n., female: **A** dorsal aspect **B** dorsal c_2 seta. Scale bars = 50 µm (**A**), 10 µm (**B**).

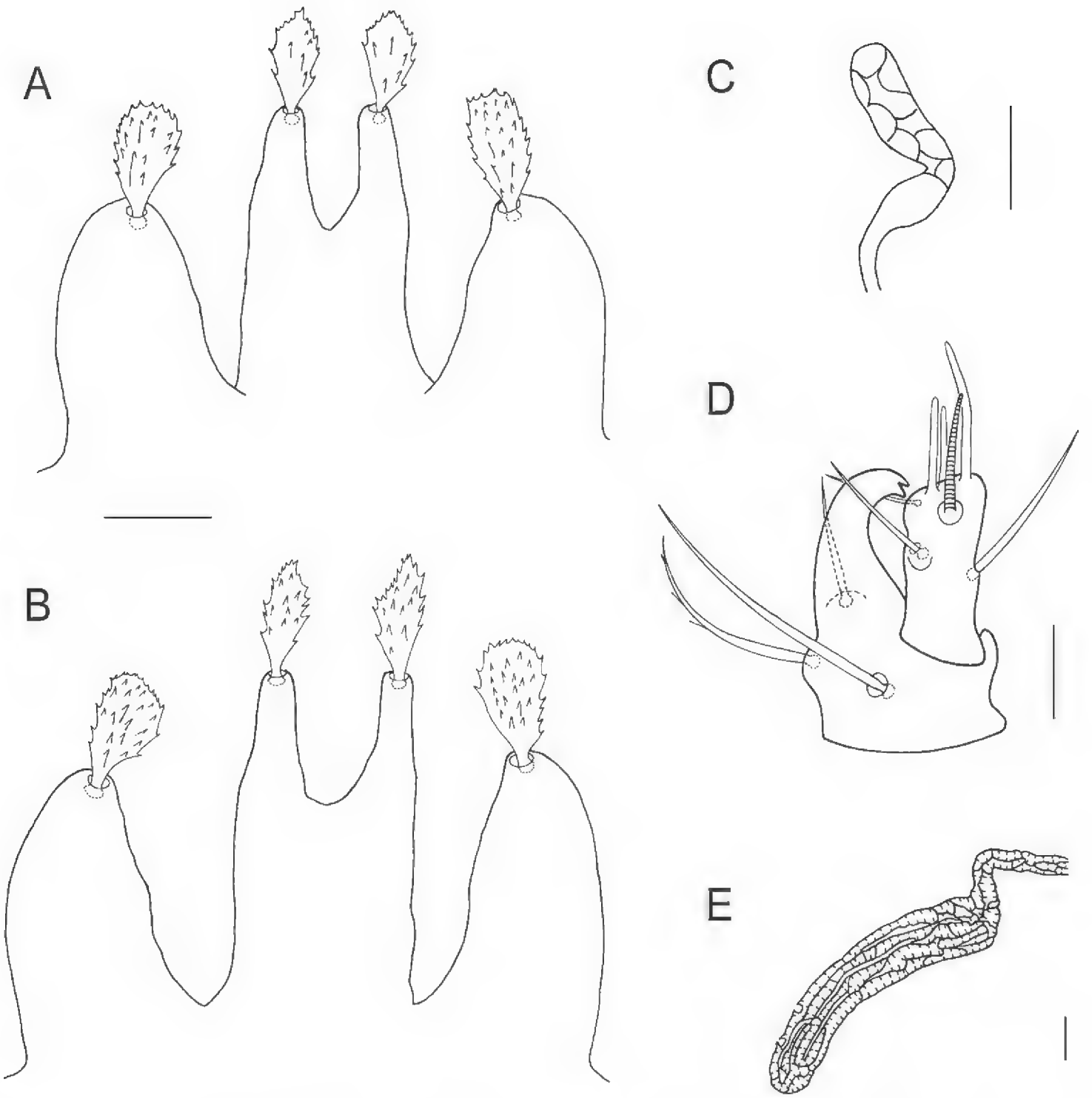

Figure 7. *Bryobia gigas* sp. n., female: **A** prodorsal lobes **B** variation in prodorsal lobes **C** spermatheca **D** palpal tibia and tarsus **E** peritremal distal enlargement. Scale bars = 25 µm (**A–B**), 10 µm (**C–E**).

between the inner lobes to their tip, excluding setae). Incision between median and outer lobes deep and narrow. The imaginary transverse line passing to the top of the outer lobes crosses inner near or just above the bottom of the incision. The line joining tips of second pair of propodosomal stae (v_2) located on the outer lobes generally passes just above the bases of the first pair (v_1). Distance between v_1 and v_2 setae insertions 29 (19–29) and 86 (86–103), respectively, v_1 and v_2 setae subequal in length, v_1 and v_2 subspatulate to spatulate, v_2 wider. Dorsal body setae spatulate, palmate, rough, serrate, inserted on small bulge-like structures, subequal in length, sc_1 the shortest (Fig. 6A–B). Dorsocentral setae (c_1, d_1 and e_1) shorter than distances between consecutive setae (length of holotype and variations of 7 paratypes): v_1 28 (24–30); v_2 30 (29–31); sc_1 24 (21–24); sc_2 24 (20–26); c_1 28 (24–29); c_2 29 (22–30); c_3 24 (21–27); d_1 26

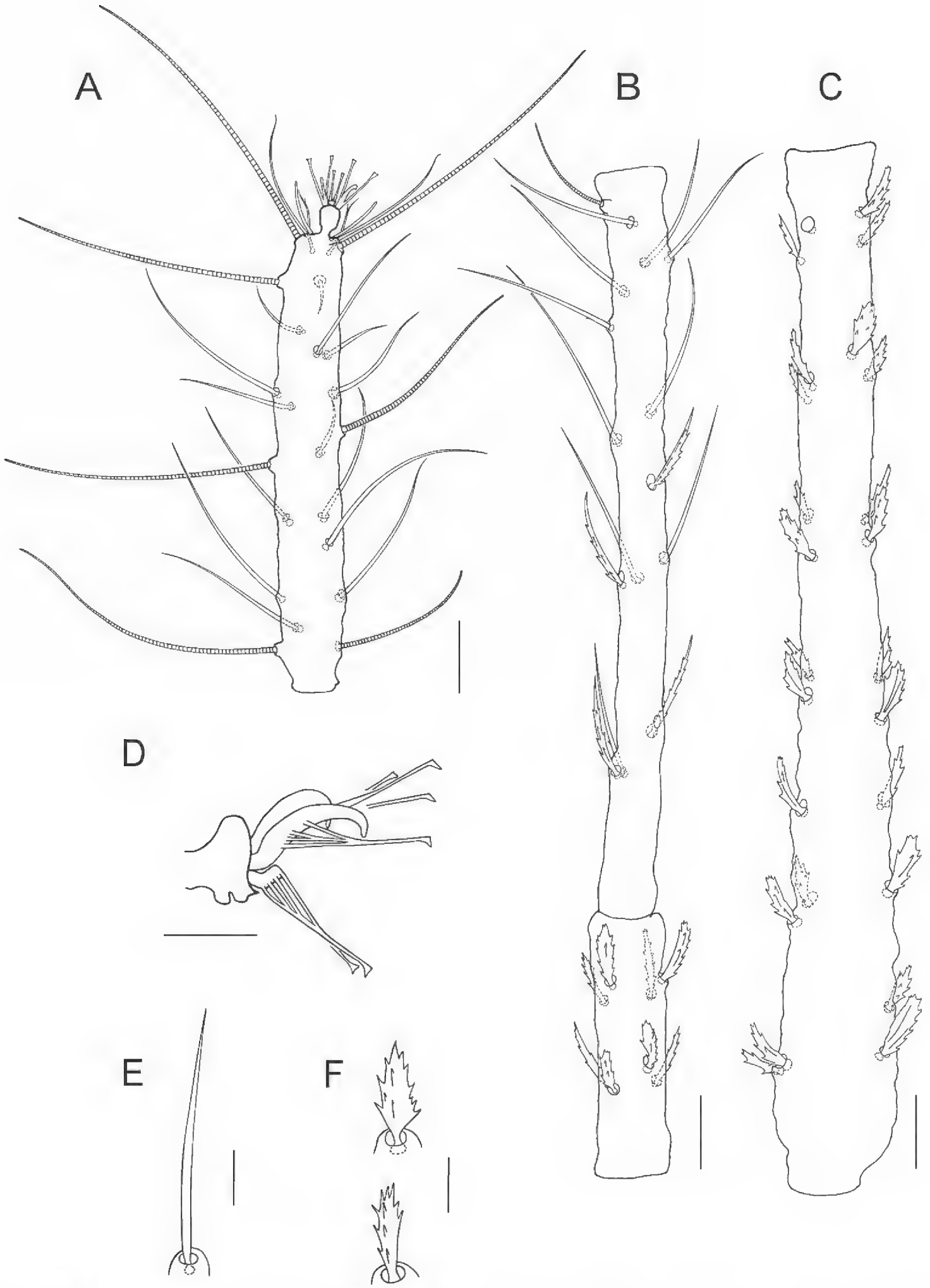

Figure 8. *Bryobia gigas* sp. n., female: **A** tarsus I **B** tibia and genu I **C** femur I **D** claws and empodium I **E** coxisternal seta *1b* **F** coxisternal seta *1c* (variations). Scale bars = 25 µm (**A–C**), 10 µm (**D–F**).

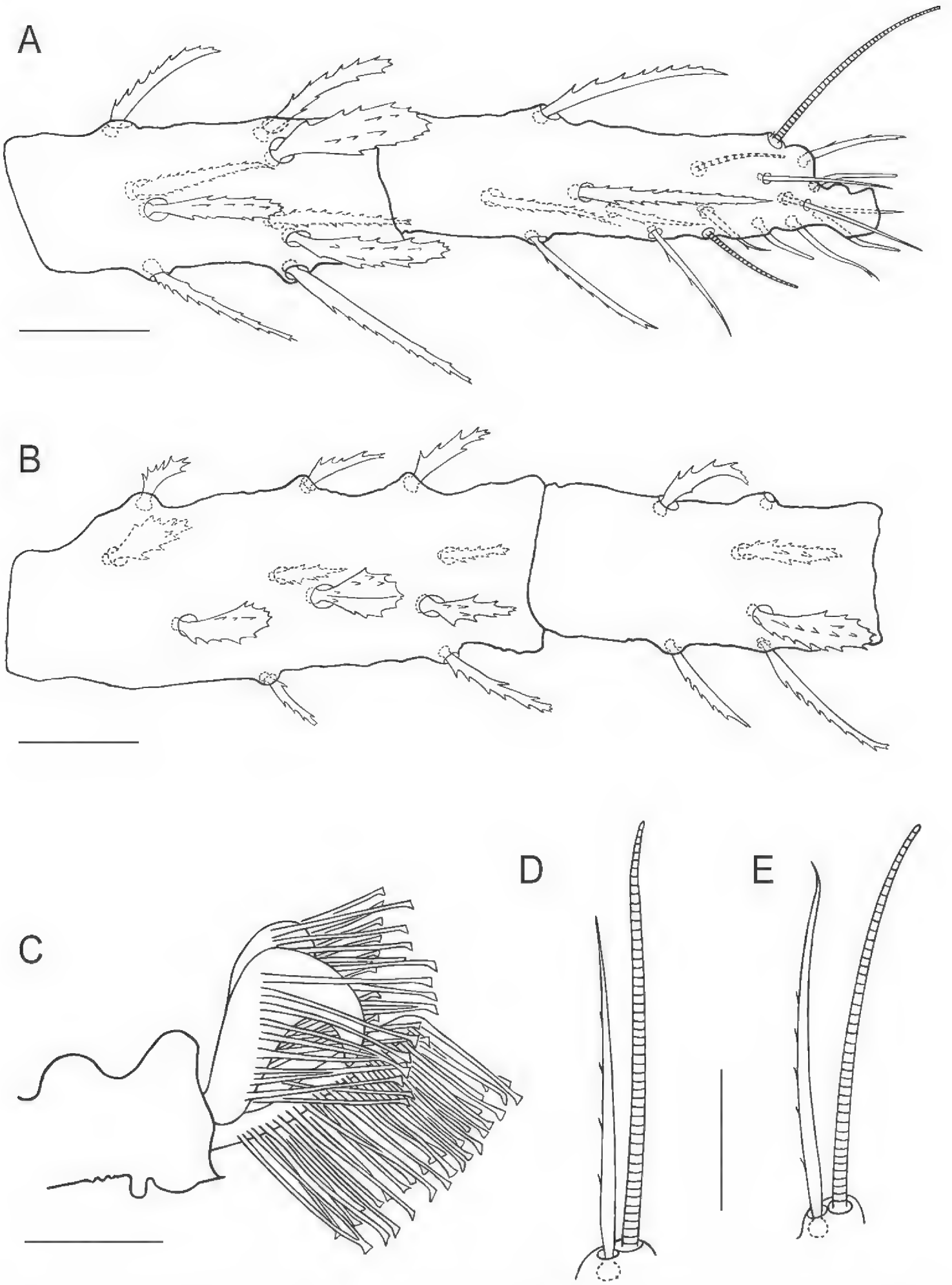

Figure 9. *Bryobia gigas* sp. n., female: **A** tarsus and tibia II **B** genu and femur II **C** claws and empodia II–IV **D** duplex setae on tarsus III **E** duplex setae on tarsus IV. Scale bars = 25 µm (**A–B**), 10 µm (**C–E**).

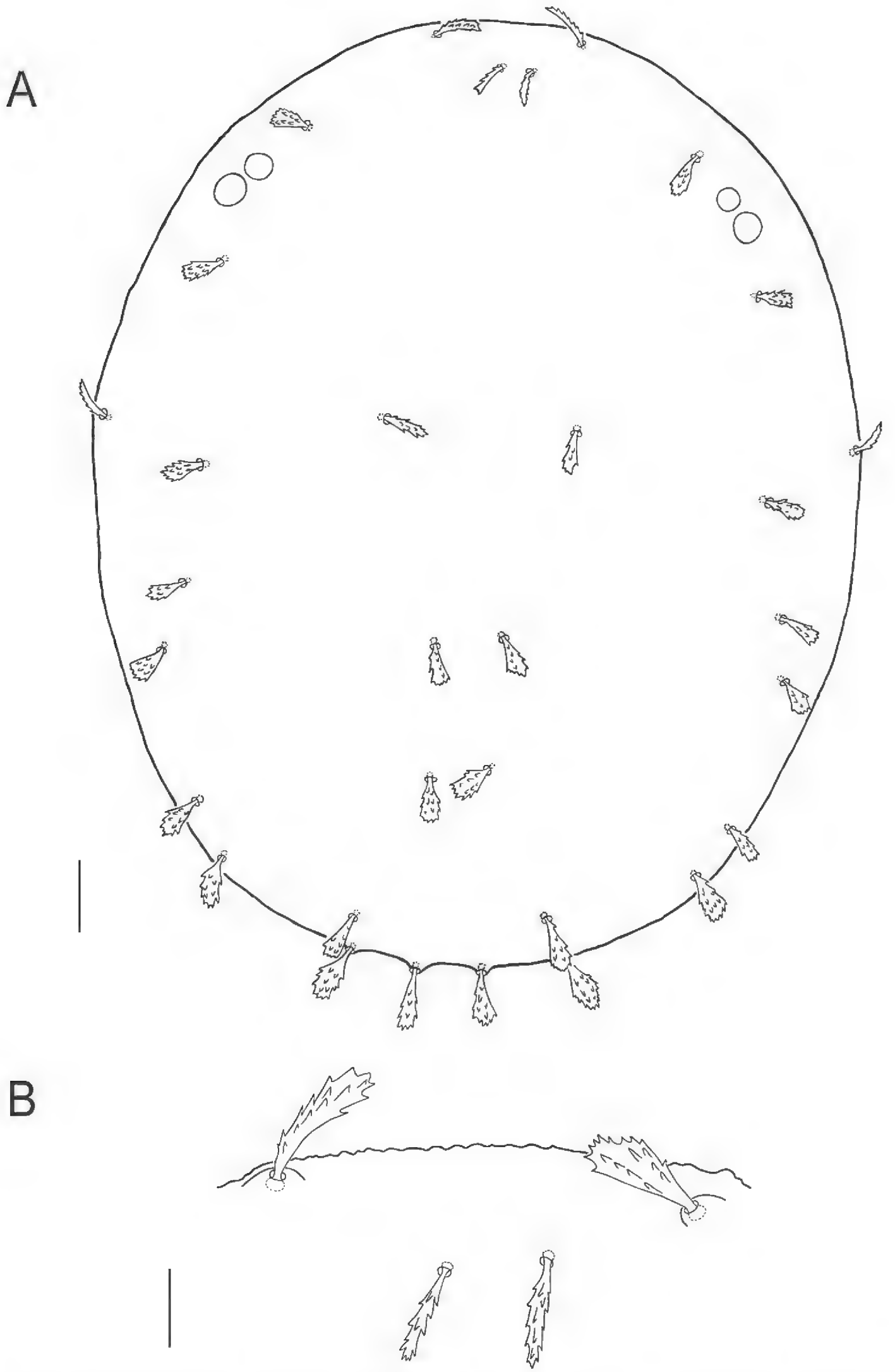

Figure 10. *Bryobia gigas* sp. n., larva: **A** dorsal aspect **B** prodorsal setae (v_1, v_2). Scale bars = 25 µm (**A**), 10 µm (**B**).

(23–29); d_2 28 (22–31); d_3 26 (22–30); e_1 29 (25–30); e_2 27 (25–28); e_3 28 (23–30); f_1 27 (23–27); f_2 27 (23–28); h_1 26 (23–26). Distances between setae: c_1- c_1 88 (83–98), d_1- d_1 67 (67–79), e_1- e_1 68 (63–74), c_1- d_1 145 (125–149), d_1- e_1 111 (11–127). Sacral setae (f_1 and f_2) in marginal position, not contiguous. Dorsal integument on propodosoma with irregularly rounded reticulated granulated pattern medially more elongated laterally and oblique. Folds on hysterosoma mostly transverse, irregularly arched in the caudal part. Two pairs of more or less oval-shaped shallow dimples present between d_1- d_3, and e_1- e_3 setae and one present posteriorly.

Gnathosoma. Stylophore longer than wide. Tibial claw of palpus bidentate. Palptarsus subequal in length to tibial claw, about 28 (27–29) long with three tactile setae, three eupathidia and one solenidion (Fig. 7D). Eupathidia *ul'*ζ, *ul''*ζ shorter than solenidion, *su*ζ longer than solenidion. Peritreme anastomosed distally in a relatively long and slender enlargement, 62 (52–71) long (Fig. 7E).

Venter. Striation transverse between 1st (*1a*) and 2nd (*3a*) pairs of setae, between 2nd and 3rd (*4a*) irregular longitudinal striation medially more or less oblique or arched laterally, transverse above and between *4a* and the area anterior to aggenital (*ag*) setae, longitudinal between members of *ag* setae, area immediately anterior to genital flap with irregular longitudinal striation. Sacculus of spermatheca elongated, length 22.5, width 5.5 (Fig. 7C). Three pairs of pseudanal setae (ps_{1-3}) and two pairs of ventrocaudal (h_{2-3}) setae present.

Legs. Leg I subequal in length to body length, other legs inferior to body length. Leg I 926 (825–947) long (measured from trochanter to tarsus), leg II 392 (345–392), leg III 353 (352–373), leg IV 470 (412–470). Length of segments of leg I as follows: trochanter 50 (41–69), femur 360 (300–360), genu 90 (84–102), tibia 260 (227–274), tarsus 168 (155–180). Leg setal counts as follows (Figs 8A–C, 9A–B):

I	2 - 1 – 25[23–24] - 8[7] – 15[16] + (1) – 20[19] + (5)[(6)] + 2 duplexes;
II	1 - 1 – 11[10] – 6[5] – 9[8] – 15 + (2) + 1 duplex;
III	1 - 1 – 5[4] – 6[5–7] - 9[8] – 13 + 1 duplex;
IV	1 - 1 - 5 – 6[5] - 9[8] – 13 + 1 duplex.

True claws uncinate, claw and empodium I with one pair of tenent hairs, other claws with several pairs of tenent hairs, other empodial pads each provided with two rows of tenent hairs (Figs 8D, 9C). Coxisternal seta *1b* slender 41 (40–50), coxisternal seta *1c* shorter 17 (17–20), serrate, stout (Fig. 8E–F). Tarsi III and IV associated setae serrate and approximate with solenidion forming duplex, the tactile member shorter (about ¾ the length of solenidion) and proximal (Fig. 9D–E).

LARVAE: two larvae measured, 366–370 long (including gnathosoma), width 246–255.

Dorsum. Prodorsal lobes absent (Fig. 10A–B). Prodorsal setae serrate, subspatulate except v_1 short, elongated. v_1 setae inserted without tubercle, v_2 inserted on small bulges. Other dorsal setae inserted on tiny bulges more obvious posteriorly. Hysterosomal

setae serrate, wider caudally, subspatulate to spatulate, e_3 and f_1 wider, f_2 and h_1 longer. Setae f_1 in normal position.

Lengths of dorsal setae: v_1 13; v_2 18–20; sc_1 16–18; sc_2 15; c_1 15–16; c_2 16; c_3 16; d_1 19–17; d_2 16–17; d_3 15–16; e_1 18–21; e_2 16–18; e_3 19; f_1 18–21; f_2 22–23; h_1 22–23.

Legs. Length inferior to body length, leg I 235–248 long. Leg setal counts as follows:

I	1 - 0 - 3 - 4 - 5 + (1) – 7 + 1 duplex;
II	0 - 0 – 3 - 4 - 5 – 7 + 1 duplex;
III	0 - 0 – 2 – 2 - 5 – 6.

True claws uncinate with one pair of tenent hairs, empodia with two rows of tenent hairs. On femur I, internal seta smooth, dorsal seta serrate.

Remarks. *Bryobia gigas* is morphologically close to three species, that belong to a species-group characterized by: 1) prodorsal inner and outer lobes very well developed, outer teat like not triangular, anteromedian well separated; 2) associated setae forming a duplex on tarsus IV, tactile member shorter than solenidion; 3) similar setal counts especially on leg I with 29 and 16 setae on tarsus and tibia, respectively, and on leg II with 19 and 9 setae on tarsus and tibia, respectively; 4) a pair of tenent hairs on the empodium of the foreleg and two rows of tenent hairs on the other empodia. These species are *Bryobia osterloffi* Reck, 1947, *B. vasiljevi* Reck, 1953 and *B. lagodechiana* Reck, 1953.

Among this species-group *B. gigas* and *B. lagodechiana* have a similar large body size. *Bryobia gigas* is mainly distinctive from *B. lagodechiana* by the shape of the inner incision between the anteromedian prodorsal lobes which is wide and bottom rounded in the former whereas narrow in the latter. In addition, the line that passes to the tips of v_2 setae does not reach the bases of v_1 setae in *B. lagodechiana*. They also have a different setal count on genu I with 7–8 and 4–5 setae present in *B. gigas* and *B. lagodechiana*, respectively.

Bryobia gigas can be easily distinguished from *B. osterloffi* and *B. vasiljevi* by its body and leg sizes which are far smaller in the latters. Moreover, in *B. osterloffi*, the incision between the inner prodorsal lobes is wide but less deep than in *B. gigas* (the line that passes to the top of the outer lobes does not reach the bottom of the incision between inner lobes), it is not bottom-rounded but with a flat bottom and the distal part of the peritreme is less elongated. *Bryobia gigas* also differs from *B. vasiljevi* by the incision between the inner prodorsal lobes which is narrow. According to Livshits and Mitrofanov (1971), 6 setae are present on the femora III and IV of *B. vasiljevi* whereas 5 are present in *B. gigas*. However, type's examination of *B. vasiljevi* in Reck's collection gave conflicting data because 5 setae only are present on femora III and IV of the 21 type specimens. As a consequence, this morphological criterion cannot be used to distinguish between the two species.

Etymology. The specific epithet *gigas*, name given to "Giants" in Greek mythology, refers to the quite unusual large body and legs sizes of this species.

Key to species of the French *Bryobia* (♀):

1 Prodorsal lobes poorly developed or absent **2**
- Prodorsal lobes well developed over gnathosoma **4**
2 Dorso-hysterosomal setae elongate, short, variable in length, *h*1 the largest, c_1 and d_1 shorter than half the distance between consecutive setae .... ***B. sarothamni* Geisjke, 1939**
- Dorso-hysterosomal setae elongate, long, subequal in length, c_1 and d_1 longer than half the distance between consecutive setae **3**
3 Dorsocentral setae serrate, stout, shorter than distance between consecutive setae ..... ***B. cinereae* Auger & Migeon, 2014**
- Dorsocentral setae serrate, narrow, d_1 surpass bases of e_1 setae... ***B. belliloci* sp. n.**
4 Femur I with 4 long setae present on its interior dorsal row **5**
- Femur I without this character **11**
5 Empodium I with one pair of tenent hairs **6**
- Empodium I with more than one pair of tenent hairs 7
6 Propodosomal inner lobes mammelliform, inflated, largely fused; deutonymphal dorsohysterosomal setae e_3 and f_1 subspatulate, 5 tactile setae and 1 solenidion on tibia I ..... ***B. provincialis* Eyndoven & Vacante, 1985**
- Propodosomal inner lobes not mammelliform, well separated distally; deutonymph with setae e_3 and f_1 elongate, narrow, 9 tactile setae and 1 solenidion on tibia I ..... ***B. mercantourensis* Auger & Migeon, 2014**
7 Outer propodosomal lobes triangular **8**
- Outer propodosomal lobes not triangular, broad or mammelliform **10**
8 Female body length superior to 630 µm, spermatheca subglobular .... ***B. berlesei* Eyndhoven, 1957**
- Female body length inferior to 600 µm, sacculus of spermatheca elongate.... **9**
9 Sacculus of spermatheca elongate short, 14–22 µm long, male unknown..... ..... ***B. pandayi* Eyndoven & Vacante, 1985**
- Sacculus of spermatheca elongate long, 30–40 µm long, male present .... ***B. pyrenaica* Eyndoven & Vacante, 1985**
10 Female body length inferior to 510 µm, spermathecal sacculus pyriform, distal part of peritreme about 50 µm long..... ***B. dekocki* Eyndoven & Vacante, 1985**
- Female body length superior to 570 µm, spermathecal sacculus elongate, peritremal anastomosis 60–64 µm long..... ***B. ulicis* Eyndoven, 1959**
11 Tarsus IV associated seta well separated from solenidion, distal .... ***B. rubrioculus* (Scheuten, 1957)**
- Tarsus IV associated seta approximate with solenidion forming duplex **12**
12 Outer prodorsal lobes well developed, mammelliform, separate from anteromedian lobes by a deep incision **13**
- Outer prodorsal lobes triangular **14**
13 Incision between anteromedian lobes wide and bottom-rounded, body and leg I large (860–916 and 825–947 µm long, respectively)..... ***B. gigas* sp. n.**

- Incision between anteromedian lobes narrow, body and leg I smaller (690–840 and 760–778 µm long, respectively) .....***B. vasiljevi* Reck, 1953**

14 Female body and leg I about 900 µm long or more, male present ....***B. graminum* (Schrank, 1781)**

- Female body and leg I inferior to 750 µm long.....**15**

15 Larval dorsal setae narrow, needle-like, narrowly subspatulate on protonymphs, on *Ribes* sp.....***B. ribis* Thomas, 1896**

- Larval dorsal setae narrowly subspatulate, spatulate and wider distally on protonymphs, on *Hedera helix* ..... ***B. kissophila* Eyndhoven, 1955**

Acknowledgements

We would like to thank Edisher Tschadaia, curator at the Illia State University, Georgia, for allowing us to examine type specimens in the Reck's collection.

References

Auger P, Migeon A (2014) Three new species of Tetranychidae (Acari, Prostigmata) from the French Alps (South-Eastern France). Acarologia 54: 15–37. doi: 10.1051/acarologia/20142111

Lindquist EE (1985) External anatomy. In: Helle W, Sabelis MW (Eds) Spider mites Their Biology, natural enemies and control. Elsevier Science Publishing, Amsterdam, 3–28.

Livshits IZ, Mitrofanov VI (1971) The mites of the genus *Bryobia* C.L. Koch, 1836 (Acariformes, Bryobiidae). Trudy Gosudarstvennogo Nikitskogo Botanicheskogo Sada 51: 1–112.

Migeon A, Dorkeld F (2006–2013) Spider Mites Web: a comprehensive database for the Tetranychidae. http://www1.montpellier.inra.fr/CBGP/spmweb/ [accessed 3.XII.2014]

Reck GF (1947) Genus *Bryobia* Koch (Tetranychidae) described on the data material from Georgia. Soobshcheniya Akademii Nauk Gruzinskoi SSR 8: 653–660.

Reck GF (1953) Research investigation on the fauna of the Tetranychidae in Georgia. Trudy Instituta Zoologyi Akademyi Nauk Gruz SSR 11: 161–181.